

### **ABSTRACT OF THE DISCLOSURE**

An arrangement and a method for controlling a combustion engine, e.g. of the type called HCCI engine. A control unit for controlling the self-ignition of the fuel mixture towards an optimum crankshaft angle ( $\text{cad}_{\text{iopt}}$ ) within a load range ( $L_{\text{tot}}$ ). The load range ( $L_{\text{tot}}$ ) can be divided into at least two subranges ( $L_I$ ,  $L_{II}$ ) and the control unit is adapted to controlling the self-ignition of the fuel mixture towards an optimum crankshaft angle ( $\text{cad}_{\text{iopt}}$ ) within a first subrange ( $L_I$ ) by means of a strategy (I) which entails a variable amount of hot exhaust gases being supplied to or retained in the combustion chamber, and within a second subrange ( $L_{II}$ ) by means of another strategy (II) which entails the effective compression ratio ( $c$ ) in the cylinder being varied.